We claim:

1. A method for encoding video information, comprising the following steps of:
5   - estimating the motion of picture elements between a piece of reference video information and a piece of current video information,
- modeling the motion of picture elements using a certain set of basis functions and certain motion coefficients,
- defining a certain set of quantizers,
10 - selecting, based on a certain predetermined selection criterion, a motion coefficient quantizer from the set of quantizers, and
- quantizing the motion coefficients using the selected motion coefficient quantizer.

15 2. A method for encoding video information according to claim 1, wherein the selection criterion is the value of a certain parameter used in the encoding.

3. A method for encoding video information according to claim 2, further comprising the following steps of:
20 - defining a set of inverse quantizers,
- determining a selected motion coefficient quantizer using which the motion coefficients are quantized,
- performing inverse quantization of the quantized motion coefficients using an inverse quantizer corresponding to the selected motion coefficient quan-
25 tizer,
- determining the motion of the picture elements using the inverse quantized motion coefficients and the basis functions,
- determining a piece of prediction video information using the piece of reference video information and the determined motion of the picture elements,
30 - determining a piece of prediction error video information based on the difference of the piece of prediction video information and the piece of current video information,
- coding the piece of prediction error video information and representing it with certain prediction error coefficients,
35 - quantizing the prediction error coefficients using a prediction error quantizer, and
- selecting the motion coefficient quantizer based on the prediction error quantizer.

4. A method for encoding video information according to claim 3, wherein the quantization interval of the motion coefficient quantizer is related to the quantization interval of the prediction error quantizer.

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5. A method for encoding video information according to claim 1, wherein the predetermined selection criterion is the target image quality.

6. A method for encoding video information according to claim 1, wherein
10   the predetermined selection criterion is the amount of information needed to represent the quantized coefficients.

7. A method for encoding video information according to claim 1, wherein the motion of picture elements is modeled using a set of orthogonal basis
15   functions.

8. A method for encoding video information according to claim 7, wherein the motion of picture elements is modeled using a set of affine orthogonal basis functions.
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9. A method for encoding video information according to claim 7, wherein the motion of a picture element is represented by predicting the motion of the picture element based on the motion of certain neighboring picture elements and by determining a refinement motion for the picture element.
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10. A method for encoding video information according to claim 9, wherein the refinement motion is modeled using a set of affine orthogonal basis functions.

30   11. A method for encoding video information according to claim 1, further comprising a step of transmitting the quantized motion coefficients to a receiver.

12. A method for encoding video information according to claim 11, further
35   comprising a step of transmitting information specifying the selected motion coefficient quantizer to the receiver.

13. A method for encoding video information according to claim 1, wherein the set of quantizers comprises a number of uniform quantizers each having a different quantization interval.

5 14. A method for encoding video information according to claim 1, wherein the set of quantizers comprises a number of modified uniform quantizers, each having a different quantization interval.

15. A method for decoding encoded video information, comprising the fol-
10 lowing steps of:
- receiving quantized motion coefficients describing motion of picture elements,
- defining a set of inverse quantizers,
- determining a selected motion coefficient quantizer using which the motion
15 coefficients are quantized,
- performing inverse quantization of the quantized motion coefficients using an inverse quantizer corresponding to the selected motion coefficient quantizer,
- determining the motion of the picture elements using the inverse quantized
20 motion coefficients and certain basis functions, and
- determining a piece of prediction video information using a piece of reference video information and the determined motion of the picture elements.

16. A method for decoding encoded video information according to claim 15,
25 further comprising a step of determining the basis functions using which the motion of the picture elements is modeled.

17. A method for decoding encoded video information according to claim 15, wherein the selected motion coefficient quantizer is determined from trans-
30 mitted information relating to a certain parameter used in the encoding.

18. A method for decoding encoded video information according to claim 16, wherein the received encoded video information comprises quantized prediction error coefficients describing a piece of prediction error video informa-
35 tion, further comprising the following steps of:
- determining a prediction error quantizer using which the prediction error coefficients are quantized,

- performing inverse quantization of the quantized prediction error coefficients using an inverse quantizer corresponding to said prediction error quantizer,
- determining a decoded piece of prediction error video information using the
5 inverse quantized prediction error coefficients, and
- determining a decoded piece of current video information using the piece of prediction video information, wherein the selected inverse motion coefficient quantizer is determined based on the prediction error quantizer.

10 19. A method for decoding encoded video information according to claim 15, wherein the encoded video information comprises information indicating the selected motion coefficient quantizer.

20. A method for decoding encoded video information according to claim 15,
15 further comprising a step of receiving signalling information indicating the selected motion coefficient quantizer.

21. An encoder for performing motion compensated encoding of video information, comprising:
20 - means for receiving a piece of current video information,
- memory means for storing a piece of reference video information,
- motion field estimation means for estimating a motion field of picture elements in the piece of current video information using at least the piece of reference video information,
25 - motion field coding means, which comprise
    - means for producing motion coefficients describing the estimated motion field,
    - first selection means for selecting a quantizer from a set of quantizers, said first selection means having an input to receive information indicat-
30 ing a selection criterion and an output to send information indicating the selected quantizer, and
    - quantization means for quantizing motion coefficients using the selected quantizer, said quantization means having an input to receive information indicating the selected quantizer, a second input to receive the
35 motion coefficients, and an output to send the quantized motion coefficients, and
- motion compensated prediction means, which means comprise

- second selection means for selecting an inverse quantizer from a set of inverse quantizers, said second selection means having an input to receive information indicating a selection criterion and an output to send information indicating the selected inverse quantizer,

5 - inverse quantization means for inversely quantizing the quantized motion coefficients using the selected inverse quantizer, said quantization means having an input to receive the quantized motion coefficients, a second input to receive information indicating the selected inverse quantizer and an output to send the inverse quantized motion coefficient, and

10 - means for determining a a piece of prediction video information using at least the piece of reference video information and the inverse quantized motion coefficients.

22. An encoder for performing motion compensated encoding of video information according to claim 21, wherein the information indicating the selec-

15 tion criterion indicates a value of a certain parameter used in the encoder.

23. An encoder for performing motion compensated encoding of video information according to claim 22, comprising further:

20 - prediction error means for determining a piece of prediction error information between the piece of current video information and the piece of prediction video information and

- prediction error coding means for coding the piece of prediction error video information and representing the piece of prediction error video information

25 using certain prediction error coefficients, which comprises second quantization means for quantizing the prediction error coefficients using a prediction error quantizer, wherein the second quantization means have an output to send information indicating the prediction error quantizer and the selection in the first selection means is based on the information indicating the prediction

30 error quantizer.

24. An encoder for performing motion compensated encoding of video information according to claim 21, wherein the information indicating the selection criterion indicates a certain image quality.

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25. An encoder for performing motion compensated encoding of video information according to claim 21, wherein the information indicating the selection criterion indicates a certain bit rate.

26. A decoder for performing the decoding of encoded video information, comprising:

- memory means for storing a piece of reference video information,

5   - input means for receiving quantized motion coefficients, and

- motion compensated prediction means, which comprise

        - selection means for selecting an inverse quantizer from a set of inverse quantizers, said second selection means having an input to receive information indicating a selection criterion and an output to send informa-

10   tion indicating the selected inverse quantizer,

        - inverse quantization means for inversely quantizing the quantized motion coefficients using the selected inverse quantizer, said quantization means having an input to receive the quantized motion coefficients, a second input to receive information indicating the selected inverse quan-

15   tizer and an output to send the inverse quantized motion coefficient, and

        - prediction means for determining a piece of prediction video information using at least the piece of reference video information and the inverse quantized motion coefficients.

20   27. A decoder for performing the decoding of encoded video information according to claim 26, wherein said encoded video information comprises information indicating said selection criterion.

28. A decoder for performing the decoding of encoded video information according to claim 26, further comprising means for receiving signalling infor-

25   mation indicating said selection criterion.

29. A decoder for performing the decoding of encoded video information according to claim 26, wherein said encoded video information comprises quan-

3.0   tized prediction error coefficients, comprising

        - an input to receive the quantized prediction error coefficients,

        - means for determining a prediction error quantizer used in the quantization of the prediction error coefficients and a corresponding inverse prediction error quantizer, and

35   - second inverse quantization means for inversely quantizing the quantized prediction error coefficients using the inverse inverse prediction error quantizer, said second inverse quantization means having an output to send information indicating the prediction error quantizer, and

the selection in the selection means is based on the information indicating the prediction error quantizer.

30. Computer program element for performing motion compensated encoding
5   of video information, comprising:
- means for receiving a piece of current video information,
- memory means for storing a piece of reference video information,
- motion field estimation means for estimating a motion field of picture elements in the piece of current video information using at least the piece of
10   reference video information,
- motion field coding means, which comprise
        - means for producing motion coefficients describing the estimated motion field,
        - first selection means for selecting a quantizer from a set of quantizers,
15   said first selection means having an input to receive information indicating a selection criterion and an output to send information indicating the selected quantizer, and
        - quantization means for quantizing motion coefficients using the selected quantizer, said quantization means having an input to receive in-
20   formation indicating the selected quantizer, a second input to receive the motion coefficients, and an output to send the quantized motion coefficients, and
- motion compensated prediction means, which means comprise
        - second selection means for selecting an inverse quantizer from a set of
25   inverse quantizers, said second selection means having an input to receive information indicating a selection criterion and an output to send information indicating the selected inverse quantizer,
        - inverse quantization means for inversely quantizing the quantized motion coefficients using the selected inverse quantizer, said quantization
30   means having an input to receive the quantized motion coefficients, a second input to receive information indicating the selected inverse quantizer and an output to send the inverse quantized motion coefficient, and
        - means for determining a piece of prediction video information using at least the piece of reference video information and the inverse quantized
35   motion coefficients.

31. Computer program element for performing the decoding of encoded video information, comprising:

- memory means for storing a piece of reference video information,
- input means for receiving quantized motion coefficients, and
- motion compensated prediction means, which comprise

    - selection means for selecting an inverse quantizer from a set of inverse quantizers, said second selection means having an input to receive information indicating a selection criterion and an output to send information indicating the selected inverse quantizer,

    - inverse quantization means for inversely quantizing the quantized motion coefficients using the selected inverse quantizer, said quantization means having an input to receive the quantized motion coefficients, a second input to receive information indicating the selected inverse quantizer and an output to send the inverse quantized motion coefficient, and

    - prediction means for determining a piece of prediction video information using at least the piece of reference video information and the inverse quantized motion coefficients.

32. Computer program element as specified in claim 30 or 31, embodied on a computer readable medium.